Aviation Data Integration System

NASA Ames Research Center Computational Sciences Division

Computer scientists at Ames Research Center's Computational Sciences Division have invented the Aviation Data Integration System (ADIS), a Web-based archive that integrates environmental data from more than 2,000 airports, giving flight safety analysts access to weather data previously unavailable to them.

With ADIS, flight analysts are able to view environmental conditions that, with human and mechanical factors, can help them understand the context surrounding anomalous events. At the same time, ADIS blocks any information that would identify a flight number, pilots or flight personnel, upholding confidentiality agreements with pilots and flight personnel.

ADIS' secure framework allows the airplanes to store data, encrypting it so that the information will be hidden from a system user. The FAA Office of Voluntary Safety Programs is making the ADIS archive available to airlines.

In addition to confidentiality, the ADIS project's engineers solved the problem of integrating the environmental material. Each airport reports weather data types at varied intervals, some at each hour, others every few minutes or even seconds and in different abbreviations and formats. ADIS matches them up, updating and archiving data such as wind speed, visibility and which runways are in use.

Airlines are using ADIS to:

• place in context flight data events and to verify weather conditions during maintenance-related events.

• document reported weather conditions around the time of events disclosed through voluntary reports.

Union representatives at these carriers have praised the technology for its key function—providing the context while maintaining the confidentiality of reports and flight data.

Airline employees have praised the technology for its key function -- providing the context while maintaining the confidentiality of reports and flight data.

The ADIS project collaborates with the Aviation Performance Measuring System (APMS) project, which develops advanced concepts and prototype software for aircraft flight data and is funded by NASA's Aviation Safety and Security Program. The APMS team is made up of researchers from the Computational Sciences and the Human Factors Research and Technology divisions at Ames Research Center, Battelle Memorial Institute and Pro Works Inc.

Organizations interested in licensing ADIS can contact Ames Research Center's Commercial Technology Office.

Contact Deepak Kulkarni kulkarni@ptolemy.arc.nasa.gov
http://ic.arc.nasa.gov